WETLAND MITIGATION SITE MONITORING REPORT
FAP 322 (U.S. 51), Jackson County, IL - 2004

Introduction

This report details the third year of monitoring of the wetland mitigation sites created to compensate for approximately 0.8 ha (2 ac) of wetlands impacted as a result of FAP 322 (U.S. 51) relocation and improvement, in Jackson County, Illinois. For reports detailing the first and second years of monitoring see Busemeyer et al. (2002) and Busemeyer et al. (2003), respectively.

Three areas of wet meadow creation were proposed for the project. Two of these areas (Sites 4 and 5) were actually created. Together these two sites cover approximately 0.52 ha (1.27 ac). Native grasses and cover crops were planted at these sites along with bald cypress (*Taxodium distichum*), swamp white oak (*Quercus bicolor*), and pin oak (*Quercus palustris*) seedlings. A third wet meadow creation area (marked Site 9) was found to be unaltered. Besides the wet meadow creation areas, a backwater high flow channel/floodplain forest enhancement was created (Site 2a). This area covers approximately 0.10 ha (0.25 ac). Native grasses and cover crops were planted in this area with the expectation that native hydrophytic tree species from surrounding areas will colonize the site. A second floodplain forest enhancement was not implemented (Site 7). Streambank restoration was proposed and carried out on an area covering approximately 0.17 ha (0.42 ac) (Site 1). At this site river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), white pine (*Pinus strobus*), swamp white oak (*Quercus bicolor*), pin oak (*Quercus palustris*), and bald cypress (*Taxodium distichum*) seedlings were planted. Two adjacent areas of floodplain forest preservation (Sites 8 and 10) and two areas of upland forest buffer (Sites 3 and 6) are also listed on the schematic diagram (Appendix C, Figure 2) although these areas have had no apparent topographic, hydrologic, or vegetative.

This complex of sites is located along the east side of U.S. Route 51, adjacent to a channelized section of Piles Fork Creek (a tributary of Orchard Creek), alongside the campus of Southern Illinois University south of Carbondale, IL. The legal location is W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W. The project area lies within the United States Geological Survey Mississippi River hydrologic unit 07140106 (Big Muddy River). Details concerning the timing of site construction and tree planting were not provided. It seems likely, however, that the Illinois Department of Transportation (IDOT) completed construction of the site around spring 2002 and that trees were planted on the site around the same time or shortly thereafter. Additional trees were planted on the site between August of 2002 and August of 2003.

This report discusses the goals, objectives, and performance criteria for the mitigation project, the methods used for monitoring the site, monitoring results, and a discussion and recommendations based on the results. Methods and results are discussed by performance criteria for each goal. Wetland determination forms have been completed for Sites 4 and 5 and for both the altered and unaltered sections of Site 2 [the backwater

channel creation (Site 2a) and the mesic floodplain forest (Site 2b)]. These forms are included in appendix A. Photos of Sites 2a, 2b, 4, and 5 were taken during on-site monitoring on 18 August 2004 are included in appendix B. An Illinois State Geological Survey figure showing the extent of measured wetland hydrology for 2004 and a second figure showing the boundaries of the wetland creation/enhancement sites is included in Appendix C.

Goals, Objectives, and Performance Standards

Goals, objectives, and performance standards follow those specified in the tasking order (Scott Marlow, IDOT Wetlands Unit, 2002) developed for this site and the wetland compensation plan (Charles Perino, IDOT Wetlands Unit, 1996). Performance criteria are based on those specified in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and in *Guidelines for Developing Mitigation Proposals* (USACE 1993). Each goal should be attained by the end of the 5-year monitoring period. Goals, objectives, and performance criteria are listed below.

Project goal 1: Wet meadow communities (sites 4 and 5) and high flow backwater channel/wetland floodplain forest enhancement areas (sites 2a and 2b) will meet the criteria of jurisdictional wetlands.

Objective: The created wetlands should cover approximately 0.8 ha (2.0 ac).

Performance criteria:
a. Predominance of hydrophytic vegetation: More than 50% of the dominant plant species must be hydrophytic in the created wetlands.
b. Presence of wetland hydrology: The created wetlands must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated within 30 cm (12 in) of the surface for at least 12.5% of the growing season.
c. Occurrence of hydric soils: Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist in the created wetlands.

Project goal 2: Created wet meadows (Sites 4 and 5) and high flow backwater channel/wetland floodplain forest enhancement areas (sites 2a and 2b) will meet minimum standards of floristic composition.

Objective: All mitigation areas should be composed of vegetation characteristic of the stated community type.

Performance criteria:
a. Full vegetative cover of the sites: Mitigation sites must have at least 75% vegetative cover.
b. Predominance of non-weedy native vegetation: None of the three most dominant species in any stratum at any of the sites may be invasive native or exotic species such as *Typha* spp. (cattails), *Phalaris arundinacea* (reed canary grass), or *Lonicera* spp. (honeysuckles).

c. Predominance of herbaceous vegetation in wet meadow creations: After five years none of the dominant species may be woody in the wet meadow areas.

Project goal 3: Floodplain forest will be established along the Piles Fork Creek streambank restoration (Site 1).

Objective: Floodplain forest should cover approximately 0.1 ha (0.2 ac). Native non-invasive herbaceous understory vegetation should colonize the site naturally.

Performance criteria:
a. Establishment of tree seedlings: 50% of planted trees must survive after five years.
b. Dominance of woody vegetation: Woody vegetation should predominate.

Methods

Project goal 1

a. Predominance of hydrophytic vegetation

The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). It is based on aerial coverage estimates for individual plant species. Each of the dominant plant species is then assigned its wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter, *i.e.*, FAC, FAC+, FACW, and OBL, is considered a hydrophyte. A predominance of vegetation in the wetland plant community exists if more than 50% of the dominant species present are hydrophytic.

b. Presence of wetland hydrology

Illinois State Geological Survey (ISGS) personnel installed 16 ground water monitoring wells, one rain gauge, one global data logger, one RDS data logger, and one staff gauge at the site in 2002 and 2003. Locations for these sites can be found in the ISGS document *Annual Water-level Report for Active IDOT Sites* (Appendix C; Fucciolo et al. 2003; Fucciolo et al. 2004). Water-level data was collected monthly from May 2002 through 2004. The ISGS has reported on the hydrology of the site in Fucciolo et al. (2004; reproduced in Appendix C). Secondary hydrology indicators were also noted during fieldwork on 18 July 2002, 11 September 2003, and 18 August 2004.

c. Occurrence of hydric soils

At each creation/restoration site the soil was sampled in order to monitor hydric soil development. Soil profile morphology including horizon color, texture, and structure was described. Additionally, the presence, type, size, and abundance of redoximorphic features was noted.

Hydric soils may develop slowly, and characteristics may not be apparent during the first several years after project construction. In the absence of hydric soils indicators at the end of

the five year monitoring period, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation persist at the site.

Project goal 2

a. 75% vegetative cover of the sites

Percent cover for each site was determined. After five years each of the sites should have at least 75% cover.

b. Predominance of non-weedy native vegetation

Species lists were compiled for each site. Dominant species and all weedy or non-native species were noted. After five years no weedy or non-native species should be dominant in any of the sites.

c. Predominance of herbaceous vegetation in wet meadow creations

Any dominant woody plant species for the wet meadow creations have been noted. After five years no woody species should be dominant in the wet meadow creation sites.

Project goal 3

a. Establishment of tree seedlings

In order to establish floodplain forest, tree seedlings were planted at Site 1. All planted trees were counted and percent survival was calculated for each species. In the floodplain forest enhancement area (Site 2a) propagules from the surrounding forest are expected to regenerate the high flow backwater channel area naturally.

b. Dominance of woody vegetation

After five years the site should be dominated by hydrophytic woody species.

Results

Project goal 1

a. Predominance of hydrophytic vegetation

Dominant plant species for the wet meadow creation areas (Sites 4 and 5) and the high flow backwater channel/floodplain forest enhancement areas (Site 2a and 2b) are shown in Table 1 (below). Since 100% of the dominant species at Sites 2a, 4, and 5 and 80% of the dominant species at site 2b are rated OBL, FACW+, FAC+, or FAC, hydrophytic vegetation is present at all wetland creation/ enhancement sites.

Table 1. Dominant plant species by stratum and wetland indicator status

Dominant Plant Species	Stratum	Indicator Status
Site 2a.		
1. *Agrostis alba* *	herb	FACW
2. *Leersia oryzoides*	herb	OBL
Site 2b.		
1. *Fraxinus pennsylvanica*	tree	FACW
2. *Platanus occidentalis*	tree	FACW
3. *Asimina triloba*	sapling	FAC
4. *Chasmanthium latifolium*	herb	FACW
5. *Lonicera japonica* *	herb	FACU
Site 4.		
1. *Salix nigra*	shrub	OBL
2. *Agrostis alba* *	herb	FACW
3. *Eupatorium serotinum* *	herb	FAC+
4. *Leersia oryzoides*	herb (planted)	OBL
Site 5.		
1. *Populus deltoides*	shrub	FAC+
2. *Agrostis alba* *	herb	FACW
3. *Eupatorium serotinum* *	herb	FAC+
4. *Leersia oryzoides*	herb (planted)	OBL

* Non-native or weedy native species

b. Presence of wetland hydrology

The project area is adjacent to Piles Fork Creek. This creek floods parts of the project area in at least some years during the growing season. A small tributary to Piles Fork Creek also flows through Site 4. The Illinois State Geological Survey (ISGS) found that wetland hydrology was present over parts of Sites 2a, 4, and 5 for sufficient duration during the growing season in 2004 to satisfy the wetland hydrology criterion (Appendix C, Figure 1; Fucciolo et al. 2004). The ISGS estimated the total area that conclusively met the wetland hydrology criterion (saturated for 12.5% of the growing season) in Sites 2a, 4, and 5 during

2004 to be approximately 0.03 ha (0.07 ac). The ISGS estimated that an additional 0.02 ha (0.04 ac) may meet the wetland hydrology criterion. This latter area was saturated for at least 5% of the growing season.

Secondary indicators of wetland hydrology, particularly matted vegetation and sediment deposits, were also found during field investigation of Sites 2a, 4, and 5. Neither we nor the ISGS found any indication of wetland hydrology at Site 1 (streambank/ floodplain forest restoration), Site 2b (floodplain forest enhancement), or any of the other sites in the project area which were not altered by restoration activities (Sites 3, 6, 7, 8, 9, and 10).

c. Occurrence of hydric soils

Soils examined at both the wet meadow creation sites (Sites 4 and 5) and the backwater high flow channel (Site 2a) were found to be highly disturbed. Much cutting and filling has been done within the top twenty inches and the sites lack a true undisturbed A horizon and part of the B horizon. Even though the soils are disturbed, hydric soil indicators are present. Following is a soil description of a typical pedon at the created wetland sites (Table 2).

Table 2. Description of the soils in the created wetlands

Depth	Matrix Color	Concre -tions	Iron Masses	Pore linings	Iron Deplet.	Tex- ture	Structure
0-13+ in	10YR 4/1, 5/1, 4/3	none	mmp 7.5YR 4/6 cmp 10YR 4/6	none	none	SiL	Gr

Project goal 2

a. Full vegetative cover of the sites

At the time of the survey all sites had nearly full (> 95%) vegetative cover.

b. Predominance of non-weedy native vegetation

Dominant plant species at each site are listed by strata in Table 1. The quality of vegetation at all of the sites is moderate to good. Floristic quality index (FQI) values range from 16.6 (Site 2a) to 21.8 (Site 4) with mean C values (mCv) ranging from 2.5 (Sites 2a and 4) to 2.9 (Site 2b). However, a number of non-native plants as well as several weedy native species are present at each site. In particular one or two of the dominants in each of the wetland creation sites (Sites 2a, 2b, 4, and 5) are non-native or weedy native species including *Lonicera japonica* (Japanese honeysuckle), *Agrostis alba* (red top), and *Eupatorium serotinum* (late boneset). These weedy species may need to be controlled in order to lessen their abundance. However, as long as native plant species are not crowded out of the creation sites by exotic or aggressive native species the quality of the vegetation should stay the same or improve over the next few years. Species lists for each of the creation/enhancement sites (Sites 2a, 2b, 4 and 5) are given in appendix A.

c. Predominance of herbaceous vegetation in wet meadow creations

Shrub size individuals of several tree species [particularly *Populus deltoides* (cottonwood) and *Salix* spp. (willow)] are present in both of these sites. *Salix nigra* is now a dominant shrub in Site 4. *Populus deltoides* is now a dominant shrub in the north half of Site 5.

Furthermore, both areas are surrounded by forest which will continue to be a source of propagules. Woody vegetation may, therefore, need to be controlled to maintain these sites as wet meadows.

Along with aggressive woody species which may invade the wet meadow restorations (Sites 4 and 5), a number of seedlings of *Quercus bicolor* (swamp white oak), *Quercus palustris* (pin oak), and *Taxodium distichum* (bald cypress) have been planted within or on the edge of the wet meadow sites (Table 3). As these trees mature they will tend to change the character of these restoration sites from wet meadow to wet shrubland and finally to floodplain forest. This circumstance may need to be addressed in coming years.

Table 3. Tree seedling establishment in the wet meadow restorations (Sites 4 and 5).

Species	Common Name	Present	Planted	Percent Surviving
Quercus bicolor	swamp white oak	11	11	100
Quercus palustris	pin oak	1	1	100
Taxodium distichum	bald cypress	74	74	100
Total		**86**	**86**	100

Project goal 3

a. Establishment of tree seedlings

Table 4 shows the planted and surviving trees in Site 1. A total of 202 live planted trees were counted. Survival of the planted trees is 78%; greater than the required 50%.

Table 4. Tree seedling establishment in the floodplain forest restoration (Site 1).

Species	Common Name	Present	Planted	Percent Surviving
Betula nigra	river birch	39	75	52
Fraxinus pennsylvanica	green ash	29	29	100
Pinus strobus	white pine	49	51	96
Quercus bicolor	swamp white oak	21	25	84
Quercus palustris	pin oak	11	13	85
Taxodium distichum	bald cypress	9	9	100
Total		**158**	**202**	78

No tree seedlings have been planted at the backwater high flow channel (Site 2). However the site is bordered by floodplain forest dominated by *Fraxinus pennsylvanica* (green ash) and *Platanus occidentalis* (sycamore). Volunteer individuals of several tree species including *Betula nigra* (river birch), *Fraxinus pennsylvanica* (green ash), *Juglans nigra* (walnut), *Platanus occidentalis* (sycamore), *Populus deltoides* (cottonwood), *Quercus palustris* (pin oak), *Salix amygdaloides* (peach-leaf willow), and *Salix nigra* (black willow) have established as seedlings at the site as a result of propagules from nearby floodplain forest.

b. Dominance of woody vegetation

At Site 1 after two years the surviving planted tree seedlings are healthy. Woody dominance at this site will continue to expand as these trees get larger and natural regeneration progresses. In the area around the created high flow backwater channel (Site 2) no trees have been planted so there is no dominant woody component at this time. However, the volunteer tree species currently present will likely increase in size and number over time.

Discussion

After three monitoring seasons, the vegetation in the wetland creation areas (Sites 2a, 4, and 5) is of moderate to good quality and is dominated by hydrophytic species. The vegetation at these sites should stay the same or show improvement in quality and diversity in coming years as long as exotic or aggressive native species do not crowd out desirable native species. However, at the present time Sites 2a, 2b, 4, and 5 each have one or two dominant non-native or weedy native species which may need to be controlled to achieve the goal of no non-native or weedy native species as dominants. Also, woody vegetation has begun to encroach and dominate the wet meadow creation areas (Sites 4 and 5). If woody species are not controlled these sites will become floodplain forest. The dominance of woody species in the floodplain forest/ high flow channel restoration (Site 2a) is desirable and will probably occur naturally since floodplain forest is nearby.

Soils at all restoration sites have been seriously disturbed. Even so, they do contain hydric soil indicators, and therefore can be characterized as hydric. The primary concern at this time for wetland establishment at these sites is continuing wetland hydrology. Hydrology is being monitored by the ISGS. In the 2004 growing season wetland hydrology was present on a total of 0.05 ha (0.11 ac) among Sites 2a, 4, and 5 during 5% of the growing season and 0.03 ha (0.07 ac) during 12.5% of the growing season (Appendix C, Figure 1; Fucciolo et al. 2004). This is approximately 0.35 ha (0.9 ac) less than in 2003. The ISGS may suggest remedial work in the area to improve hydrology.

It should also be noted that the created backwater channel (Site 2a) has not been constructed in a manner that will bring water to the adjacent mesic floodplain forest (Site 2b). This non-wetland forest cannot be expected to develop hydric soils or wetland hydrology with the current hydrologic and topographic conditions and has shown no indications of wetland hydrology in 2003 (Appendix C, Figure 1; Fucciolo et al. 2004).

Large tree seedlings have been planted in the streambank restoration area (Site 1) and in the wet meadow restorations (Sites 4 and 5). 202 live planted trees were counted in Site 1, 11 in Site 4, and 75 in Site 5. Woody species invasion and maturation of planted trees species in the wet meadow creations (Sites 4 and 5) is changing the character of these areas to wet shrubland and ultimately to floodplain forest. This issue may need to be addressed if credit is specifically needed to mitigate for emergent wetland impacts. Also, in the streambank restoration (Site 1) 51 *Pinus strobus* (white pine) seedlings have been planted. It should be noted that white pine is not native to southern Illinois and is not normally associated with floodplain forests.

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Appendix A
Wetland Determination Forms

ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 1 of 4)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: High flow channel creation/floodplain forest enhancement
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This high flow channel creation/floodplain forest enhancement is located 70 m (230 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Agrostis alba* *	FACW	herb
2. *Leersia oryzoides*	OBL	herb

* Weedy native species

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%
Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Undetermined (soil excavated)

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 7.5YR 4/6 and 10YR4/6
Redox Depletions?	Yes: X	No:	Color: 10YR 5/1

Matrix color: 10YR 4/1, 5/1, 5/2, over 4/3
Other indicators: This soil was found in a depressional area.

Hydric soils? Yes: X No:
Rationale: This soil has been altered by excavation of the surface soil layers in order to create a wetland. The soil colors present at this site are indicative of a hydric soil, but it is impossible to determine for certain whether these colors are indicative of past or current conditions at this site. However, we believe at this time that the colors reflect the current depressional landscape position. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 - Depleted matrix.

ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 2 of 4)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: High flow channel creation/floodplain forest enhancement
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This high flow channel creation/floodplain forest enhancement is located 70 m (230 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 0.33 m (13 in)
Overview of hydrological flow through the system: This site is hydrologically influenced by overflow from Piles Fork Creek, sheet flow from adjacent higher ground, and precipitation. Water leaves the site via evapotranspiration and flow into nearby Piles Fork Creek.
Size of Watershed: Approximately 10 km^2 (3.9 mi^2)
Other field evidence observed: Matted vegetation and low landscape position

Wetland hydrology: Yes: X No:
Rationale: This site has been excavated to create a high flow (overflow) oxbow. There is evidence of significant saturation in this area during the growing season.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: X No:
Rationale: Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present at the site; therefore, the site is a wetland. The NWI did not code this site as a wetland.

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ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 3 of 4)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: High flow channel creation/floodplain forest enhancement
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This high flow channel creation/floodplain forest enhancement is located 70 m (230 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acer negundo	box elder	herb	FACW-	1
Agrostis alba	red top	herb	FACW	0
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Amphicarpa bracteata	hog peanut	herb	FAC	4
Aster lateriflorus	side-flowered aster	herb	FACW-	2
Betula nigra	river birch	shrub, herb	FACW	4
Bidens cernua	beggar's ticks	herb	OBL	2
Bidens frondosa	beggar's ticks	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Bromus inermis	awnless brome grass	herb	UPL	*
Carex frankii	sedge	herb	OBL	4
Chasmanthium latifolium	sea oats	herb	FACW	4
Cyperus strigosus	flat sedge	herb	FACW	0
Desmanthus illinoensis	bundle flower	herb	FAC-	4
Echinochloa muricata	barnyard grass	herb	OBL	0
Elaeagnus umbellata	autumn olive	shrub	UPL	*
Eupatorium coelestinum	mistflower	herb	FAC+	3
Eupatorium serotinum	late flowering thoroughwort	herb	FAC+	1
Fraxinus pennsylvanica	green ash	herb	FACW	2
Hibiscus lasiocarpus	hairy rose mallow	herb	FACW+	5
Impatiens capensis	jewelweed	herb	FACW	2
Iva annua	sumpweed	herb	FAC	0
Juncus biflorus	two-flowered rush	herb	FACW	5
Juncus tenuis	path rush	herb	FAC	0
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lobelia siphilitica	blue lobelia	herb	FACW+	4
Lycopus americanus	water horehouind	herb	OBL	3
Lycopus virginicus	bugleweed	herb	OBL	5
Mimulus alatus	monkey flower	herb	OBL	6
Panicum virgatum	prairie switchgrass	herb	FAC+	4

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 4 of 4)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: High flow channel creation/floodplain forest enhancement
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This high flow channel creation/floodplain forest enhancement is located 70 m (230 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phleum pratense	Timothy	herb	FACU	*
Phlox paniculata	garden phlox	herb	FACU	3
Phyla lanceolata	fog fruit	herb	OBL	1
Platanus occidentalis	sycamore	shrub, herb	FACW	3
Polygonum punctatum	dotted smartweed	herb	OBL	3
Populus deltoides	cottonwood	herb	FAC+	2
Portulaca oleracea	purslane	herb	FAC-	*
Pyrrhopappus carolinianus	false dandelion	herb	UPL	1
Rosa multiflora	multiflora rose	shrub	FACU	*
Salix nigra	black willow	shrub, herb	OBL	3
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Solidago canadensis	Canada goldenrod	herb	FACU	1
Sorghum halepense	Johnson grass	herb	FACU	*
Strophostyles umbellata	wild bean	vine	FACU	5
Teucrium canadense	germander	herb	FACW-	3
Typha angustifolia	narrow leaf cattail	herb	OBL	*
Verbena hastata	blue vervain	herb	FACW+	3
Verbena urticifolia	white vervain	herb	FAC+	3
Verbesina alternifolia	wingstem	herb	FACW	4
Xanthium strumarium	cocklebur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 113/44 = 2.6$
$FQI = \sum C/(\sqrt{N}) = 113/(\sqrt{44}) = 17.0$

ROUTINE ONSITE WETLAND DETERMINATION

Site 2b (page 1 of 4)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Mesic floodplain forest (floodplain forest enhancement)
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This mesic floodplain forest (floodplain forest enhancement) is located 60 m (200 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Fraxinus pennsylvanica*	FACW	tree
2. *Platanus occidentalis*	FACW	tree
3. *Asimina triloba*	FAC	sapling
4. *Chasmanthium latifolium*	FACW	herb
5. *Lonicera japonica* *	FACU	herb

* Non-native species

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 80%
Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: NRCS mapped as Bonnie silt loam;
revised to Belknap silt loam (Fluvaquentic Endoaquept)

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 7.5YR 4/6 and 10YR4/6
Redox Depletions?	Yes: X	No:	Color: 10YR 5/1

Matrix color: 10YR 4/3
Other indicators: None
Hydric soils? Yes: No: X
Rationale: The Natural Resources Conservation Service identifies Belknap as a Fluvaquentic Endoaquept that is somewhat poorly drained. This soil possesses redox concentrations and depletions within a high chroma matrix, which indicates saturated or reduced conditions for only brief duration during the growing season. Therefore, the soil at this site does not meet the hydric soil criterion. This soil meets none of the NRCS hydric soil indicators.

ROUTINE ONSITE WETLAND DETERMINATION
Site 2b (page 2 of 4)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Mesic floodplain forest (floodplain forest enhancement)
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This mesic floodplain forest (floodplain forest enhancement) is located 60 m (200 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 0.48 m (19 in)
Overview of hydrological flow through the system: This site is hydrologically influenced by precipitation and, possibly, by overflow of Piles Fork Creek in large flood events. Water leaves the site via evapotranspiration and flow into nearby Piles Fork Creek and the recently created backwater channel.
Size of Watershed: Approximately 10 km^2 (3.9 mi^2)
Other field evidence observed: None.

Wetland hydrology: Yes: No: X
Rationale: This site is considerably higher than the adjacent constructed high flow channel (Site 2a) and Piles Fork Creek and is sloping down toward these areas.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: No: X
Rationale: Although dominant hydrophytic vegetation is present at the site, hydric soils and wetland hydrology are lacking; therefore, the site is not a wetland. The NWI did not code this site as a wetland.

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ROUTINE ONSITE WETLAND DETERMINATION

Site 2b (page 3 of 4)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Mesic floodplain forest (floodplain forest enhancement)
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This mesic floodplain forest (floodplain forest enhancement) is located 60 m (200 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acer negundo	box elder	tree, shrub	FACW-	1
Amphicarpa bracteata	hog peanut	herb	FAC	4
Asimina triloba	paw paw	tree, sapling	FAC	4
Aster pilosus	hairy aster	herb	FACU+	0
Boehmeria cylindrica	false nettle	herb	OBL	3
Campsis radicans	trumpet creeper	vine	FAC	2
Campanula americana	American bellflower	herb	FAC	4
Carya cordiformis	bitternut hickory	shrub	FAC	4
Celtis occidentalis	hackberry	shrub	FAC-	3
Cercis canadensis	redbud	sapling	FACU	3
Chasmanthium latifolium	sea oats	herb	FACW	4
Desmanthus illinoensis	bundle flower	herb	FAC-	4
Desmodium paniculatum	tick trefoil	herb	FACU	2
Diospyros virginiana	persimmon	sapling	FAC	2
Eleagnus umbellata	autumn olive	shrub	UPL	*
Elymus villosus	hairy wild rye	herb	FACU	4
Elymus virginicus	Virginia wild rye	herb	FACW-	4
Fraxinus pennsylvanica	green ash	tree, sap, shrub, herb	FACW	2
Geum canadense	white avens	herb	FAC	2
Gleditsia triacanthos	honey locust	shrub, herb	FAC	2
Juglans nigra	black walnut	tree, shrub, herb	FACU	4
Lespedeza cuneata	sericea lespedeza	herb	NI	*
Lonicera japonica	Japanese honeysuckle	herb	FACU	*
Lonicera maackii	Amur honeysuckle	shrub	UPL	*
Parthenocissus quinquefolia	Virginia creeper	vine, herb	FAC-	2
Phlox paniculata	garden phlox	herb	FACU	3
Platanus occidentalis	sycamore	tree, sapling	FACW	3
Polygonum virginianum	Virginia knotweed	herb	FAC	3
Populus deltoides	cottonwood	tree	FAC+	2

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION

Site 2b (page 4 of 4)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Mesic floodplain forest (floodplain forest enhancement)
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This mesic floodplain forest (floodplain forest enhancement) is located 60 m (200 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Quercus imbricaria	shingle oak	herb	FAC-	2
Quercus rubra	northern red oak	tree	FACU	5
Rosa multiflora	multiflora rose	shrub	FACU	*
Sanicula odorata	common snakeroot	herb	FAC+	2
Silphium perfoliatum	cup plant	herb	FACW-	4
Smilax hispida	bristly greenbriar	vine	FAC	3
Solidago gigantea	late goldenrod	herb	FACW	3
Toxicodendron radicans	poison ivy	shrub, vine	FAC+	1
Ulmus americana	American elm	tree, sapling	FACW-	5
Verbesina alternifolia	wingstem	herb	FACW	4
Vitis riparia	riverbank grape	vine	FACW-	2

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 102/35 = 2.9$
$FQI = \sum C/\sqrt{N} = 102/\sqrt{35} = 17.2$

ROUTINE ONSITE WETLAND DETERMINATION
Site 4 (page 1 of 6)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Salix nigra*	OBL	shrub
2. *Agrostis alba* *	FACW	herb
3. *Eupatorium serotinum* *	FAC+	herb
4. *Leersia oryzoides*	OBL	herb

* Weedy native species

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%
Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS
Series and phase: Undetermined (soil excavated)

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 7.5YR 4/6 and 10YR4/6
Redox Depletions?	Yes: X	No:	Color: 10YR 5/1

Matrix color: 10YR 4/1, 5/1, 5/2, and 4/3
Other indicators: This soil was found in a depressional area.

Hydric soils? Yes: X No:
Rationale: This soil has been altered by excavation of the surface soil layers in order to create a wetland. The soil colors present at this site are indicative of a hydric soil, but it is impossible to determine for certain whether these colors are indicative of past or current conditions at this site. However, we believe at this time that the colors reflect the current depressional landscape position. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 - Depleted matrix.

ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 2 of 6)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 0.33 m (13 in)
Overview of hydrological flow through the system: This site is hydrologically influenced by overflow from Piles Fork Creek, inflow from a small upland tributary of Piles Fork Creek, sheet flow from adjacent higher ground, and by precipitation. Water leaves the site via evapotranspiration and flow into nearby Piles Fork Creek.
Size of Watershed: Approximately 10 km^2 (3.9 mi^2)
Other field evidence observed: Matted vegetation and sediment deposits.

Wetland hydrology: Yes: X No:
Rationale: The site has evidence of significant saturation during the growing season.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: X No:
Rationale: Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present at the site; therefore, it is a wetland. The NWI codes a portion of this site as PFO1A (temporarily flooded, broad-leaved deciduous, forested, palustrine wetland).

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ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 3 of 6)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acalypha rhomboidea	three-seeded Mercury	herb	FACU	0
Acer negundo	box elder	herb	FACW-	1
Acer saccharinum	silver maple	herb	FACW	1
Agrostis alba	red top	herb	FACW	0
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Amorpha fruticosa	false indigo bush	shrub	FACW+	6
Asclepias incarnata	swamp milkweed	herb	OBL	4
Aster simplex	panicled aster	herb	FACW	3
Aster sp.	aster	herb	-	-
Betula nigra	river birch	herb	FACW	4
Bidens cernua	nodding beggar-ticks	herb	OBL	2
Bidens frondosa	common beggar's ticks	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Campsis radicans	trumpet creeper	shrub	FAC	2
Carex scoparia	broom sedge	herb	FACW	5
Carex sp.	sedge	herb	-	-
Cassia fasciculata	partridge pea	herb	FACU-	1
Cephalanthus occidentalis	buttonbush	shrub	OBL	4
Chamaesyce maculata	nodding spurge	herb	FACU-	0
Cicuta maculata	water hemlock	herb	OBL	4
Cryptotaenia canadensis	honewort	herb	FAC	1
Cyperus erythrorhizos	red-rooted sedge	herb	OBL	1
Cyperus strigosus	long scaled nut sedge	herb	FACW	0
Dactylis glomerata	orchard grass	herb	FACU	*
Daucus carota	Queen Anne's lace	herb	UPL	*
Desmanthus illinoensis	bundle flower	herb	FAC-	4
Desmodium paniculatum	panicled tick trefoil	herb	FACU	2
Desmodium sp.	tick trefoil	herb	-	-
Dichanthelium clandestinum	broad-leaved panic grass	herb	FACW	4

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 4 of 6)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Digitaria ischaemum	smooth crab grass	herb	FACU	*
Echinochloa muricata	barnyard grass	herb	OBL	0
Elaeagnus umbellata	autumn olive	shrub	UPL	*
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Elephantopus carolinianus	elephant's-foot	herb	FAC-	3
Elymus virginicus	Virginia wild rye	herb	FACW-	4
Erigeron strigosus	daisy fleabane	herb	FAC-	2
Eupatorium coelestinum	blue boneset	herb	FAC+	3
Eupatorium perfoliatum	common boneset	herb	FACW+	4
Eupatorium serotinum	late boneset	herb	FAC+	1
Festuca pratensis	meadow fescue	herb	FACU-	*
Fraxinus pennsylvanica	green ash	herb	FACW	2
Geum canadense	white avens	herb	FAC	2
Hibiscus lasiocarpus	hairy rose mallow	herb	FACW+	5
Impatiens capensis	jewelweed	herb	FACW	2
Iva annua	marsh elder	herb	FAC	0
Juglans nigra	black walnut	herb	FACU	4
Juncus interior	inland rush	herb	FAC+	3
Juncus torreyi	Torrey's rush	herb	FACW	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lespedeza cuneata	sericea lespedeza	herb	NI	*
Liquidambar styraciflua	sweet gum	herb	FACW	6
Lobelia siphilitica	blue cardinal-flower	herb	FACW+	4
Lonicera japonica	Japanese honeysuckle	herb	FACU	*
Lonicera maackii	Amur honeysuckle	shrub	UPL	*
Lycopus americanus	common water horehound	herb	OBL	3
Lycopus virginicus	bugle weed	herb	OBL	5
Mimulus alatus	winged monkey flower	herb	OBL	6
Oenothera biennis	evening primrose	herb	FACU	1
Oxalis dillenii	yellow wood sorrel	herb	FACU	0

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 5 of 6)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Panicum virgatum	prairie switchgrass	herb	FAC+	4
Paspalum laeve	smooth lens grass	herb	UPL	2
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phleum pratense	Timothy	herb	FACU	*
Phyla lanceolata	fog-fruit	herb	OBL	1
Platanus occidentalis	sycamore	herb	FACW	3
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum punctatum	dotted smartweed	herb	OBL	3
Populus deltoides	eastern cottonwood	shrub, herb	FAC+	2
Prunella vulgaris	self-heal	herb	FAC	*
Quercus palustris	pin oak	herb (planted & natural)	FACW	4
Rotala ramosior	tooth-cup	herb	OBL	4
Rudbeckia laciniata	cutleaf coneflower	herb	FACW+	3
Rumex crispus	curly dock	herb	FAC+	*
Salix nigra	black willow	shrub, herb	OBL	3
Samolus valerandii	brookweed	herb	OBL	5
Senecio glabellus	butterweed	herb	OBL	0
Setaria glauca	pigeon grass	herb	FAC	*
Silphium perfoliatum	cup plant	herb	FACW-	4
Solidago canadensis	Canada goldenrod	herb	FACU	1
Strophostyles umbellata	wild bean	vine	FACU	5
Trifolium repens	white clover	herb	FACU+	*
Typha angustifolia	narrow-leaved cattail	herb	OBL	*
Typha latifolia	cattail	herb	OBL	1
Verbascum thapsus	woolly mullein	herb	UPL	*
Verbena hastata	blue vervain	herb	FACW+	3
Verbena urticifolia	white vervain	herb	FAC+	3
Xanthium strumarium	cockle bur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 179/72 = 2.5$
~~$FQI = \sum C/(\sqrt{N}) = 179/(\sqrt{72}) = 21.1$~~

ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 6 of 6)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

PLANTED TREES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Quercus bicolor	swamp white oak	shrub	FACW+	7

† Coefficient of Conservatism (Taft et al. 1997) mCv = $\sum C/N = 186/73 = 2.5$**
* Non-native species FQI = $\sum C/(\sqrt{N}) = 186(\sqrt{73}) = 21.8$**
**These calculations include native plants from the complete species list above together with the planted trees.

ROUTINE ONSITE WETLAND DETERMINATION

Site 5 (page 1 of 5)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 480 m (1570 ft) north of the intersection of U.S. 51 and Reservoir Rd.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Populus deltoides*	FAC+	shrub
2. *Agrostis alba* *	FACW	herb
3. *Eupatorium serotinum* *	FAC+	herb
4. *Leersia oryzoides*	OBL	herb

* Weedy native species

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%
Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Undetermined (soil excavated)

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 7.5YR 4/6 and 10YR4/6
Redox Depletions?	Yes: X	No:	Color: 10YR 5/1

Matrix color: 10YR 4/1, 5/1, 5/2, and 4/3
Other indicators: This soil was found in a depressional area.
Hydric soils? Yes: X No:
Rationale: This soil has been altered by excavation of the surface soil layers in order to create a wetland. The soil colors present at this site are indicative of a hydric soil, but it is impossible to determine for certain whether these colors are indicative of past or current conditions at this site. However, we believe at this time that the colors reflect the current depressional landscape position. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 - Depleted matrix.

ROUTINE ONSITE WETLAND DETERMINATION
Site 5 (page 2 of 5)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 480 m (1570 ft) north of the intersection of U.S. 51 and Reservoir Rd.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 0.33 m (13 in)
Overview of hydrological flow through the system: This site is hydrologically influenced by overflow from Piles Fork Creek, sheet flow from adjacent higher ground, and by precipitation. Water leaves the site via evapotranspiration and flow into nearby Piles Fork Creek.
Size of Watershed: Approximately 10 km^2 (3.9 mi^2)
Other field evidence observed: Depressional landscape position and matted vegetation.

Wetland hydrology: Yes: X No:
Rationale: The site has evidence of significant saturation during the growing season.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: X No:
Rationale: Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present at the site; therefore, the site is a wetland. The NWI codes a portion of this site as PFO1A (temporarily flooded, broad-leaved deciduous, forested, palustrine wetland).

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Champaign, Illinois 61820

ROUTINE ONSITE WETLAND DETERMINATION

Site 5 (page 3 of 5)

Field Investigators: Busemeyer and Wiesbrook
Date: 18 August 2004 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 480 m (1570 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acalypha rhomboidea	three-seeded Mercury	herb	FACU	0
Acer saccharinum	silver maple	herb	FACW	1
Agrostis alba	red top	herb	FACW	0
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Asclepias incarnata	swamp milkweed	herb	OBL	4
Aster lateriflorus	side-flowered aster	herb	FACW-	2
Betula nigra	river birch	shrub, herb	FACW	4
Bidens cernua	nodding beggar-ticks	herb	OBL	2
Boehmeria cylindrica	false nettle	herb	OBL	3
Calystegia sepium	American bindweed	herb	FAC	1
Carex scoparia	broom sedge	herb	FACW	5
Cassia fasciculata	partridge pea	herb	FACU-	1
Catalpa speciosa	cigar tree	herb	FACU	5
Chamaesyce maculata	nodding spurge	herb	FACU-	0
Cicuta maculata	water hemlock	herb	OBL	4
Conyza canadensis	horseweed	herb	FAC-	0
Cyperus strigosus	long scaled nut sedge	herb	FACW	0
Desmanthus illinoensis	bundle flower	herb	FAC-	4
Equisetum hyemale affine	tall scouring rush	herb	FACW-	2
Eupatorium coelestinum	blue boneset	herb	FAC+	3
Eupatorium serotinum	late boneset	herb	FAC+	1
Festuca pratensis	meadow fescue	herb	FACU-	*
Fraxinus pennsylvanica	green ash	shrub, herb	FACW	2
Hibiscus lasiocarpus	hairy rose mallow	herb	FACW+	5
Humulus lupulus	common hops	herb	FACU	2
Impatiens capensis	jewelweed	herb	FACW	2
Iva annua	marsh elder	herb	FAC	0
Juglans nigra	black walnut	herb	FACU	4
Juncus biflorus	two-flowered rush	herb	FACW	5
Juncus effusus solutus	common rush	herb	OBL	4

Species list continued on next page.

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SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Juncus tenuis	path rush	herb	FAC	0
Juncus torreyi	Torrey's rush	herb	FACW	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lespedeza cuneata	sericea lespedeza	herb	NI	*
Lobelia siphilitica	blue cardinal-flower	herb	FACW+	4
Ludwigia palustris americana	marsh purslane	herb	OBL	4
Lycopus americanus	common water horehound	herb	OBL	3
Lycopus virginicus	bugle weed	herb	OBL	5
Medicago sativa	alfalfa	herb	UPL	*
Mimulus alatus	winged monkey flower	herb	OBL	6
Oenothera biennis	evening primrose	herb	FACU	1
Paspalum laeve	smooth lens grass	herb	UPL	2
Phyla lanceolata	fog-fruit	herb	OBL	1
Platanus occidentalis	sycamore	herb	FACW	3
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum punctatum	dotted smartweed	herb	OBL	3
Populus deltoides	eastern cottonwood	shrub, herb	FAC+	2
Quercus bicolor	swamp white oak	herb	FACW+	7
Salix nigra	black willow	shrub, herb	OBL	3
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Setaria glauca	pigeon grass	herb	FAC	*
Silphium perfoliatum	cup plant	herb	FACW-	4
Solidago canadensis	Canada goldenrod	herb	FACU	1
Solidago gigantea	late goldenrod	herb	FACW	3
Sorghum halepense	Johnson grass	herb	FACU	*
Typha angustifolia	narrow-leaved cattail	herb	OBL	*
Verbena hastata	blue vervain	herb	FACW+	3
Verbena urticifolia	white vervain	herb	FAC+	3
Verbesina alternifolia	wingstem	herb	FACW	4
Xanthium strumarium	cockle bur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species
**Planted species on next page.

$mCv = \sum C/N = 138/55 = 2.5$
$FQI = \sum C/(\sqrt{N}) = 138/(\sqrt{55}) = 18.6$

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PLANTED TREES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Taxodium distichum	bald cypress	shrub	OBL	7

† Coefficient of Conservatism (Taft et al. 1997) $mCv = \sum C/N = 145/56 = 2.6$**
* Non-native species $FQI = \sum C/(\sqrt{N}) = 145(\sqrt{56}) = 19.4$**
**These calculations include native plants from the complete species list above together with the planted trees.

Appendix B
Photographs of Sites 2a, 2b, 4, and 5

Photo 1. Site 2a, facing south.

Photo 2. Site 2b, facing west.

Photo 3. Site 4, facing east.

Photo 4. Site 5, facing north.

Appendix C
Wetland Hydrology (Figure 1) & Project Area (Figure 2)

Carbondale Wetland Compensation Site
(FAP 322)
Estimated Areal Extent of 2004 Wetland Hydrology

map based on IDOT mitigation design plan rectified to USGS digital orthophotograph
Carbondale NW quarter quadrangle (ISGS 2002)

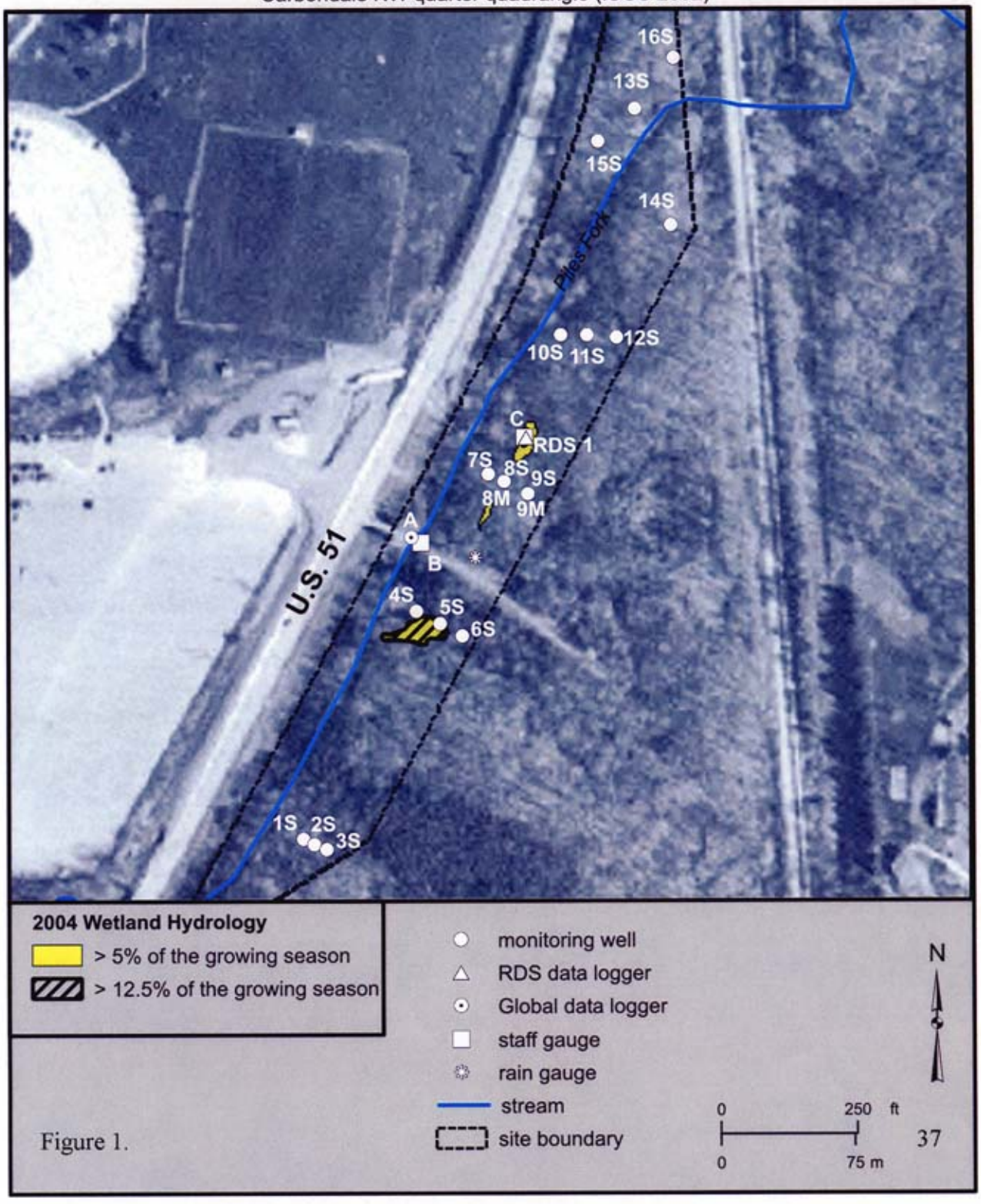

Figure 1.

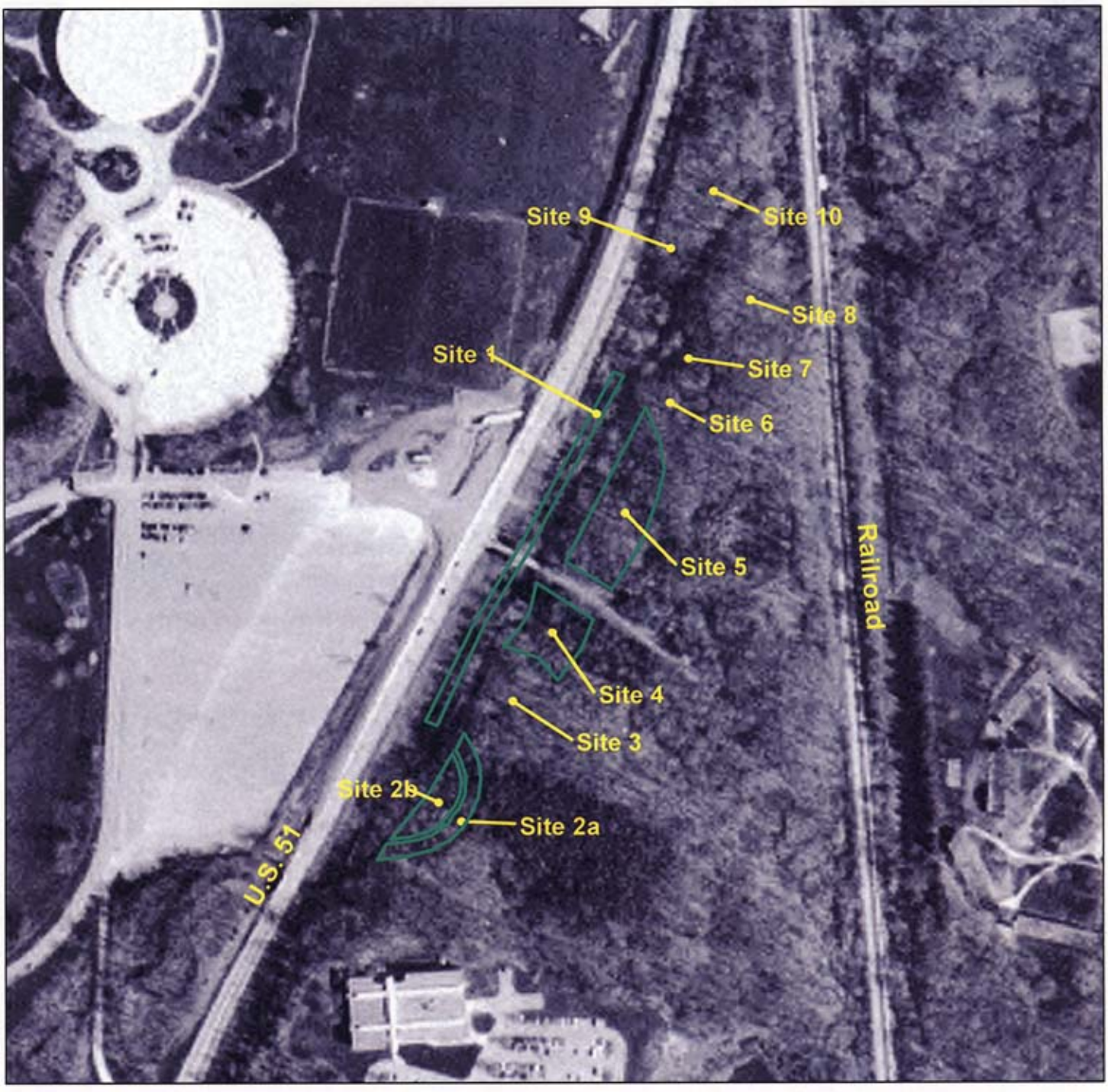

Figure 2. Sites 1-10
FAP 332 (U.S. 51) Mitigation Site Monitoring
18 August 2004, Carbondale, Illinois